ABSTRACT OF THE DISCLOSURE

An optical homodyne communication system and method in which a side carrier is transmitted along with data bands in an optical data signal, and upon reception, the side carrier is boosted, shifted to the center of the data bands, and its polarization state is matched to the polarization state of the respective data bands to compensate for polarization mode dispersion during transmission. By shifting a boosted side carrier to the center of the data bands, and by simultaneously compensating for the effects of polarization mode dispersion, the provided system and method simulate the advantages of homodyne reception using a local oscillator. The deleterious effects of chromatic dispersion on the data signals within the data bands are also compensated for by applying a corrective function to the data signals which precisely counteracts the effects of chromatic dispersion.

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